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## A WEEKLY EPITOME
OF
## CURRENT MEDICAL LITERATURE.

### MEDICINE.

**(278) The Course and Treatment of Purulent Pleuritic Effusions.**

IN a long contribution to the *Revue de Médecine* for November, 1890, Professor M. Kiener, of Montpelier, discusses the question of the natural course and treatment of pleuritic effusions, and especially those of the fibrino-purulent and wholly purulent forms respectively. His own experience, which has been extensive, proves that much greater success has attended the treatment of such cases in recent years than was formerly the case. He discusses the routine treatment of pleurotomy with antiseptic cleansing of the pleural cavity, and suggests that a constant practice of this kind is not necessary. The fibrino-purulent effusions are produced by the pneumococcus, the streptococcus pyogenes, or the tubercle bacillus. The wholly purulent effusions are set up by the staphylococcus aureus or albus, either alone or associated with other forms of micro-organism, and especially with the tubercle bacillus. He shows that the fibrogenous process of inflammation may be independent of the action of any micro-organisms, but that the subsequent changes which the effused fibrinous material is to undergo are largely influenced by their presence. Dead organised products may undergo softening, probably by the action of some ferment contained within them, and may become completely absorbed. Cultures made with fluids undergoing this process may cause liquefaction of gelatine without the smallest trace of any bacterial growth. The occurrence of fibrino-purulent effusions, following septic forms of pneumonia and inflammation of other organs, has been shown to have been closely associated with influenza and the presence of the pneumococcus, and illustrative cases are quoted by Professor Kiener in which pleurotomy and antiseptic cleansing have effected a cure. Examples of successful treatment of pleurisy following simple pneumonia are also given. He points out that where purulent effusion follows upon infectious disease it tends to localise itself, and the organisms which flourish within it do not penetrate deeply into surrounding structures, but, if allowed to remain undisturbed, the conditions become those of a local abscess, and the general system is gradually poisoned by the ptomaines engendered by the micro-organisms. In the case of multiple abscesses it is sometimes advisable to allow the pus to break its way into the bronchi. Pleurotomy is not always necessary, as simple puncture is sufficient in some cases, but if pus reaccumulates the chest should be opened. The operation should not be done until the fluid in the pleura is entirely converted into pus. As a general rule, fifty or sixty days should be allowed to elapse between the onset of the pleurisy and the opening of the pleura. Adding fifteen days for the initial pneumonia and two months for the recovery, the whole case would last about four months and a half. Intrapleural injections of antiseptic fluids should be avoided if possible, and free drainage provided, care being taken to prevent the entry of fresh organisms. Neutral solutions may occasionally be required to wash away accidental accumulations such as blood clots. Boracic acid solutions should be used with caution. The wholly purulent effusions associated with the presence of staphylococcus aureus and albus are by no means so regular in their clinical course as the effusions following pneumonia. In none of the cases observed during the recent epidemic of influenza could the staphylococcus aureus be found in the fluids of any of the great serous cavities, unless there had been some direct communication between those cavities and the external air. In all cases the diplococcus pneumoniæ and the streptococcus pyogenes were discovered, whether any such communication existed or not. The pathogenic action of staphylococcus differs essentially from that of pneumococcus and streptococcus. The former gives rise at once to the formation of pus, while the other two are fibrogenous, and call forth at first a solid effusion of fibrinous material which liquefies subsequently. Staphylococcus behaves towards animal tissues as a peptonising ferment, and not as a cause of coagulation. Its virulence is variable, but it is capable of retaining it for long periods. It grows luxuriantly in artificial cultivation, whereas the other forms do not. It is thus easy to understand why effusions set up by staphylococcus run such an irregular course, and are amenable only to antiseptic treatment.

**(279) Addison's Disease and the Pararenal Glands.**

DR. LANCEREAUX (*Arch. génér. de Méd.*, January, 1890) relates two cases in which the pararenal glands were the seat of tuberculous disease, the symptoms being weakness of the heart, quick pulse, gastric disturbance, and death by coma. In another case which he has seen the pararenal glands were intact, whilst the skin was bronzed. He considers that the diseased condition of these glands in Addison's disease, when it is present, is the result of degeneration of the nerves.

### SURGERY.

**(280) Absence of Cerebral Pulsation in Perforating Fracture of the Skull.**

PROFESSOR BRAUN, of Königsberg, has recently reported (*Centralblatt für Chirurgie*, November 16th) an interesting case of head injury, caused by the kick of a horse, in a child aged 3 years. The little

patient remained unconscious for a few hours after the injury, but on the following day, when first seen by Professor Braun, it did not present a single symptom indicative of injury to the brain. In the temporal region on the right side there was a small, gaping, and deep wound of the scalp, at the bottom of which, after some blood clot had been washed away, could be seen an orifice in the cranial vault about one inch in length, and, at its middle, half an inch in width. The exposed dura mater seemed to have escaped injury, and presented a normal appearance, but was quite motionless. On digital pressure over the very tense and resistant membrane, feeble, though distinctly appreciable, brain pulsations could be felt. After careful examination of the wound and the defect in the bone, one end was seen, near the outer angle of the orifice, of a piece of detached bone which had been driven into the cranial cavity, and was fixed between the dura mater and the inner surface of the cranium. This loose piece of bone was at once removed. It was made up of the whole thickness of the cranial wall, and corresponded in form and dimensions to the perforation of the skull. Immediately after its extraction, the dura mater took part in the cerebral pulsations, and became arched and prominent, so as to fill up the perforation in the cranial vault. The little patient made a good recovery, and was discharged cured at the end of the fourth week. In some remarks on this case, Professor Braun points out that separation with displacement of a single piece of bone comprising the whole thickness of the wall of the skull is of extremely rare occurrence. Whether such displacement can take place only in the thin skull of the child, and is impossible in the thicker and harder cranial bones of the adult, remains to be proved by further clinical observation. That displacement of fragments of bone and detached portions of the vitreous layer may result in the non-elevation of the dura mater by the cerebral pulsations has been observed and noted by German army surgeons, and in 1877 Professor Braun endeavoured to make out by experiments on animals, though without any satisfactory results, whether such cessation of movement were due to pressure on the surface of the brain and to cerebral anæmia, or whether the pulsation of the brain still persisted under circumstances similar to those mentioned in the recorded case, but was no longer apparent on the surface of the dura mater in consequence of the tense condition of this membrane. This case proves that the latter supposition was the correct one, and that the apparent arrest of cerebral pulsation in instances of displacement of a fragment of bone, or any other hard substance, between the cranial vault and the dura mater, is due to the fact that the movements of the brain under such conditions are not transmitted to the tightly stretched fibrous membrane. It is suggested that in those cases also in which there is an arrest of pulsatile cerebral movements in association with subdural abscess or effusion of blood, this arrest may in like manner be only apparent and the result merely of stretching of the dura mater.

### (281) Cysts of the Epididymis.

In the *Revue de Chirurgie* for November M. Poirier writes upon cysts of the epididymis. He discusses the three prevailing theories as to their formation, namely, from the remains of the Wolffian body; from rupture of spermatic tubules; and, lastly, from retention cysts. These three theories correspond to the three varieties of cysts which actually exist, but the last seems applicable to the greatest number. Professor Roth's interesting observation, that vasa aberrantia often spring from the rete testis, is confirmed. Forty-three testicles were injected with mercury, and in twenty-five a vas aberrans sprang from the rete testis, usually at the junction of the head of the epididymis with the body of the testicle and at the top of the digital fossa. This unrecognised blind tube probably originated from one of the tubules of the Wolffian body, and by accumulation of fluid within it gave rise to cysts; these, as they grow, acquire communication with the spermatic ducts, and become spermatic cysts. Serous cysts are next described, and are said to originate in three situations: between the head of the epididymis and testis, at the middle part of the body of the epididymis, and between the tail of the epididymis and testis. They were not to be confounded with the serous cysts found in old men, nor with those due to faults in the seminal tubes, and which are lined with columnar ciliated epithelium. On the contrary, this variety was lined with two kinds of epithelium, namely, ciliated and pavement. Also, they are capable of growing to a considerable size and of becoming true spermatic cysts. Like cysts in other regions, they owe their origin to traumatism or to inflammation, and only acquire their communications with seminal tubes at later stages of their existence, after which they grow rapidly. Further, the adhesions which the epididymis and testes form with one another after birth are a factor in the formation of these serous cysts. The conclusion arrived at by Dr. Poirier is that the retention theory does not account for the formation of a great many cysts of the epididymis, and that there is a variety of serous cysts which originate during the adhesion of the epididymis to the testis, and which afterwards form communications with spermatic ducts, and then rapidly increase.

### (282) Curved Linear Osteotomy for the Treatment of Ankylosis of the Knee in Children.

M. Kummer (*Revue d'Orthopédie*, November, 1890, p. 462) relates a case treated by the curved linear incision described by Professor Helferich, of Greifswald, at the Congress of German Surgeons, 1890. The patient was a child, aged 8 years, who, in consequence of a blow received on the knee six years previously, had suffered from inflammation and suppuration followed by ankylosis and displacement. The knee was flexed at an angle of 35°, and there was genu valgum to the extent of 10° and rotation to 5°. An incision was made transversely from one condyle to another in the line of the joint, the patella separated by the chisel, the fibrous adhesions which existed between the external condyle and the tibia cut through, and the internal condyle, which was ankylosed by bone to the inner tuberosity of the tibia, divided with the saw by a curved incision corresponding to its articular border. The posterior layer of the capsule was next divided, and the limb easily placed in a straight position. The wound was drained, dressed with iodoform gauze, and the limb secured in plaster-of-paris. Twenty-three days after the operation, the patient was allowed to get up. There is now only one centimètre of difference between the length of the two limbs, and the scoliosis which previously existed has completely disappeared. The interest of this operation lies chiefly in the fact that the epiphyses are not injured, and consequently that the growth of the limb is not interfered with, as is too frequently the case after excision of the joint in children.

### (283) Results of Amputation at the Hip-joint for Malignant Tumours of the Femur.

H. Borck, in *Langenbeck's Archiv*, part iv, 1890, p. 941, records the history of 111 cases with the immediate and ultimate results of treatment, and

the results are certainly not encouraging. Full references are given to the cases, so that the details are readily available for anyone who is desirous of going more minutely into the matter. Besides these 111 cases, Borck records 9 which have come under his own observation, only one of which survived 27 months without any return of the growth, and surgical experience would hardly warrant us, therefore, in regarding even this case as a permanent cure. Of the 111 cases 23 died of causes directly connected with the operation—shock, secondary hæmorrhage, etc. Of the 87 cases that remain 51 must be deducted because they were lost sight of within ten months of the operation. This leaves only 36 to be accounted for. Of these 20 survived the operation less than a year, two less than two years, one less than three years, and one lived for nearly five years, but all of them died from return of the tumour in some distant part of the body. Six cases died of some disease other than that for which they underwent operation. Three of the remaining four cases were alive, but had signs of secondary growth, and one of them had undergone a second operation; and of all the 111 cases only in one case was there absolutely no sign of return after three years. At the same time Borck claims as a result of his inquiries that life was probably prolonged in most of the cases.

**(284) Pyo- and Hydro-nephroses and Cysts of the Kidney.**

UNDER this title Professor Heinrich Braun (*Archiv für Chirurgie*, 1890, part iv, p. 923) records an interesting case of congenital cyst in connection with the kidney, which was tapped and injected with iodine on three or four occasions, and eventually came under his own care. He drained it, but the cyst was found to be full of pus, and the temperature was raised. The child died apparently from the shock of the operation, and a cyst of considerable size was found which communicated with the pelvis of the kidney.

## MIDWIFERY AND DISEASES OF WOMEN.

**(285) The Treatment of Interacting Bladder and Kidney Disease in Women.**

PROFESSOR GUYON (*Annales de Gynécologie*, August, 1890), publishes a lecture on a subject of high clinical and surgical importance. This subject is partly explained by the long title of the lecture "Cystalgiæ Symptomatic of Renal Lesions and Pyonephroses following Vesical Lesions; Influence of Treatment of the Bladder on Uretero-Pyelitis." This clinical lecture is based upon two cases of women with simultaneous pain in the bladder and kidneys. One patient passed urine full of pus, the kidneys were large and painful, and she suffered from agonising attacks of vesical spasm. There was also feverishness, with dry tongue and dyspepsia. On mature deliberation, M. Guyon concluded that the origin of the trouble lay in the bladder, and that it was not advisable to operate on the kidney at once. The bladder was therefore laid open from the vagina, and kept open. The vesical pains at once ceased, the spasms never returned. More slowly the condition of the kidneys improved, the pain disappeared, and then they diminished in size until they ceased to be palpable on manual exploration. M. Guyon bases treatment of this kind on a careful examination of the bladder. When, as in this case, the sound causes severe pain when it touches the mucous membrane, when the bladder is tender on pressure of the hand over the pubes, or of the forefinger against the anterior vaginal wall, the primary lesion will be in the bladder, and the renal swelling and pain will be secondary. Let the bladder rest, then the kidney will empty itself, and this will cause subsidence of the pathological changes in the renal pelvis and glandular tissue. All such cases do not demand so active a treatment as cystotomy. Simple medical treatment of cystitis, rest, and weak antiseptic injections may be sufficient if taken in time. On the other hand, Bozeman's treatment of pyonephrosis by establishment of a vesico-vaginal fistula and subsequent catheterisation of the ureters cures the renal complication on the same principle; but the practice is only to be undertaken by experts. The gynæcologist and surgeon must not be misled by theories about renovesical reflexes, which imply that the primary disease lies in the kidney. M. Guyon's second patient was in an earlier stage of treatment when the lecture was delivered, but the vesical pain, fever, and dry tongue had disappeared. In a neighbouring ward lay a man who had entered with retention and infiltration of urine from giving way of the urethra; at the same time a large pyonephrosis of the right kidney was detected. The infiltration and retention were treated in the usual manner. Within two months all the physical signs of pyonephrosis had completely disappeared. "To run to the assistance of the kidneys by methodical treatment of the lower part of the urinary tract should be a fundamental law of surgery."

**(286) Removal of a Glass Tube from the Female Bladder.**

DR. LIHOTZKY (*Centralb. f. Gynäk.*, No. 25, 1890) describes a case which occurred in Professor Chrobak's wards in Vienna. Last April a patient, aged 57, applied at the hospital, saying that she had a piece of glass tubing in her bladder. For seven years she had been subject, for no very evident reason, to severe dysuria, ending in incontinence of urine and in complete inability to empty the bladder voluntarily. She could not afford to buy a catheter, so she took it into her head to introduce a simple glass tube rounded off at one end in a jet of gas. The night before admission she fell asleep as she sat in bed over the urinal with the improvised catheter in the bladder. It snapped, and one end remained in the bladder; she vainly attempted to extract it by means of a hairpin. The passage of a sound showed the presence of glass in the bladder, and on digital exploration a foreign body could be felt through the anterior vaginal wall, inclined from the right above to the left below. The urethra was dilated under chloroform, by Hegar's instrument, until the forefinger could be introduced. Columns of greatly hypertrophied mucous membrane were plainly felt. When the glass tube was touched—then not done without some difficulty—its broken end was brought so as to be close to the urethra. A fine curved forceps was next passed along the forefinger and the tube was withdrawn without much difficulty. The finger protected the urethral mucous membrane from the broken end of the glass. The fragment of tube was two-fifths of an inch long, and its calibre was under a fifth of an inch. As the forcible dilatation had caused a tear on the anterior part of the urethral wall, the injury was repaired by three interrupted sutures. No incontinence of urine followed, but catheterism was needed after the operation as before. The sutures were removed in a few days. The temperature rose to 103° shortly after the extraction of the tube, and a burning sensation was felt in the bladder. This was relieved by washing out the vesical cavity with boracic acid solution, followed by the injection of a 5 per cent. solution of cocaine.

**(287) Puerperal Convulsions and Cæsarean Section.**

Dr. Halbertsma, of Utrecht (*Annales de Gynéc*, October, 1890), read a paper on this subject before the Berlin Congress. He observed that the mortality of puerperal eclampsia remained high, notwithstanding the progress recently made in the medical treatment of that complication. He was therefore of opinion that in the more critical cases Cæsarean section might ensure the saving of both mother and child, when otherwise both would be doomed. In two instances he carried his theory into practice, and on both occasions with complete success, the mother and child recovering. Cæsarean section for puerperal eclampsia has already been performed six times in Holland. In one case alone, when the patient was moribund and the uterus left unsutured, the mother died. Of the children, one only, born at the beginning of the eighth month, died shortly after birth. Not only did the operation fail to set up fresh convulsions, but it promptly stopped the eclampsia. The hæmorrhage—almost unavoidable in so serious an operation on a vascular organ like the pregnant uterus—far from increasing the patient's danger, appeared, on the contrary, to exercise a favourable influence on her general condition. In conclusion, Dr. Halbertsma laid down certain rules for the treatment of puerperal eclampsia. When convulsions occurred towards the end of pregnancy or the beginning of labour, treatment by narcotics and hot baths was to be discarded in favour of certain minor surgical proceedings, such as Dührssen's practice of making incisions in the cervix. In unfavourable cases, such as instances where complete suppression of urine set in, a more serious operation like Cæsarean section might be demanded. The patient must not be suffered to die undelivered.

**(288) Uncontrollable Vomiting of Pregnancy.**

Dr. Flaischlen (*Festschr. d. Section f. Geburtsh. u. Gynäk.*, Tenth International Medical Congress, p. 81) notes that this affection has been attributed to true disease of the gastro-intestinal tract complicating pregnancy, to inflammatory conditions in the neighbourhood of the uterus, and to displacements. Over and above these causes, hyperemesis gravidarum has been referred to a reflex neurosis of the stomach, starting from a normal or diseased uterus. Dr. Flaischlen believes most in the latter doctrine, and does not think that the rapid loss of strength is alone due to starvation from vomiting. It is rather the result of a profound disturbance of the whole nervous system, reflected from the uterus to the heart, and thus disturbing the cardiac innervation, and later on affecting the nutrition of the cardiac muscular tissue, so that collapse has occurred after cessation of the vomiting. Dr. Flaischlen quotes five cases, two in his own and three in Professor Ruge's practice. In the first case the vomiting began a few weeks after conception, and brought the patient to peril in the third month. Artificial induction of labour (twins being delivered) cured the vomiting. The second patient died after three weeks' severe vomiting during the seventh month; this case was a twin pregnancy, with hydramnios, and complicated by stenosis (*sic*) of the bowel. Labour was induced, and she sank a few hours later. The ureters were not obstructed. The third case conceived directly after marriage; severe vomiting set in three weeks later, and caused great emaciation. Rectal feeding did good for a time, but the patient died at the tenth week. In the fourth case (a primipara) the vomiting set in still earlier, namely, in the first week. The woman became very weak. At the tenth week Dr. Ruge introduced a laminaria tent; abortion took place, and the patient recovered rapidly. Thirteen months later she gave birth to a living child, the second pregnancy being normal. The fifth case was fatal. The patient was in her fourth pregnancy. The first two were normal; the second was accompanied by hyperemesis, and premature labour set in. In the fourth pregnancy vomiting began before the uterus had increased in size. At the fifth month the patient was so ill that the immediate induction of labour was proposed. There was some delay, and laminaria tents were introduced into the uterus; the vomiting ceased at the end of the week, and the fœtus was then removed. Sharp flooding occurred during delivery. The patient died in a few hours. None of the viscera were found to be unhealthy, nor was there marked anæmia. Statistics show that in mild cases hyperemesis is curable by expectant treatment. The severe cases are very fatal, either if left alone or if labour be induced by the most experienced obstetrician. Horwitz has shown that in these cases labour must be promptly induced. We operate much too late, in his opinion. The same observer has shown that the disease is common in the upper classes, and very rare amidst the poor.

## PHARMACOLOGY AND THERAPEUTICS.

**(289) An Experimental Criticism of our Knowledge of the Action of Cocaine.**

Dr. U. Mosso (*Pflüger's Archiv*, 1890, Hft. 11 and 12, pp. 553-601) has published an exhaustive paper on cocaine, in which he collates the work of previous investigators, criticises it, and adds a number of experiments made by himself to prove and illustrate his arguments. The paper is too long even to abstract in detail, but his most important conclusions may be given, although many of them are simply confirmatory of previous work. (1) Cocaine in 10 per cent. solution applied to a mixed nerve paralyses in an equal degree its motor and its sensory strands. (2) Cocaine given internally does not paralyse the terminations of sensory nerves, as curare does of motor nerves. Its action in diminishing general sensibility is chiefly due to an effect on the cells of the spinal cord. It is possible that when cocaine is administered by the stomach or subcutaneously it may diminish to an inappreciable extent the sensitiveness of the sensory end organs, but the amount circulating in the blood is too small to have any pronounced action. Locally applied, a 2 to 10 per cent. solution is necessary for the production of anæsthesia, and this strength can never be applied through the circulation, as it implies the administration of a much more than lethal dose. (3) Direct application of a solution to the medulla causes paralyses of the medullary centres. (4) In dogs doses of $\frac{1}{2}$ milligramme per kilogramme of body weight had no effect on muscular contraction; 1 milligramme acted as a muscular stimulant, and 3 milligrammes acted as a muscular paralysant. Experiments made on the isolated muscles of frogs and dogs gave similar results. (5) Its general anæsthetic action resembles in many respects that of chloroform or ether. Like them it acts as a protoplasm poison; like them, also, it first affects the psychical functions of the brain, and then sensitiveness to pain, which disappears first in the extremities, then in the trunk, and then in the cornea. (6) After its application the nerves are not injured, and return very speedily to an absolutely normal condition. Mosso also performed a number of exact experiments on himself to investigate the action of cocaine on muscle during its normal condition, during fasting, and during fatigue. These were made on the flexor muscle of the middle finger;

muscular contraction was induced either voluntarily or by the interrupted current, and the finger was made to lift a weight of 2 kilogrammes. Tracings were taken in every case and carefully compared. While the author was in a perfectly normal condition he stimulated the muscle seven times per minute for fifteen minutes. He then rested until the muscle had quite recovered from its slight fatigue, and took 1½ grain of cocaine hydrochlorate by the mouth. On again stimulating the muscle he found that its capacity for doing work was increased. The same dose injected directly into the arm diminished the working power of the muscle. Experiments of the same kind are given to show that the stimulant action is still more marked on muscles which have been tired out by previous work and are in a state of great fatigue. After fasting for forty-two hours he found that the working power of the muscle was very greatly diminished, but cocaine restored it to more than the normal for voluntary contraction, and to very nearly the normal when contraction was induced by electric stimulation. He found also that, after hard physical work with prolonged fasting, small doses of cocaine acted as a speedy restorative, and concludes that, apart from its action on the nervous system, it acts largely as a direct muscle stimulant. He found, also, that it lessened the physiological reaction time, that it increased the amount of air inspired, and that it contracted the blood vessels. For details on these and a number of other points the original paper had better be consulted.

**(290) Nitroglycerine in Morphine Poisoning.**

DR. SPEER (*New York Med. Journ.*, November 15th) reports the following case: A youth, aged 17, took with suicidal intent 6 grains of sulphate of morphine at 8 P.M. He was not noticed till 10 P.M., when it was found he could not be roused. Medical aid was at once summoned; as it was presumed that all the poison had been absorbed, the stomach pump was not used. One-thirtieth of a grain of atropine was injected every two hours until one-sixth had been thus used; strong coffee was injected *per rectum* at short intervals, and the battery vigorously applied. At 8 A.M. the following morning Dr. Speer saw the patient in conjunction with Dr. Stimson, and found him almost completely cyanosed, pulse 160, respirations 40, temperature 101°, loud mucous *râles* in trachea, pupils widely dilated, respiration abdominal. They decided to try the effect of nitroglycerine; one-fiftieth of a grain was injected hypodermically, and in an hour a similar quantity. The patient was then turned on his side, when very soon there was a long full thoracic inspiration; in about half an hour he vomited freely, and became conscious. He was then given another injection of half the quantity, and went to sleep, waking up in two hours all right, with the exception of headache.

**(291) Motor Paralysis after Hypodermic Injection of Ether.**

MR. DAVID WALLACE (*Ed. Med. Journal*, September, 1890) reports two cases in which local paralysis occurred after the hypodermic injection of ether. In the first case, about 20 minims of ether were injected subcutaneously into the extensor aspect of the left forearm, about the junction of the lower and middle thirds. Next morning it was observed that the extensor group of muscles of the forearm was paralysed. There was no wrist drop, the extensor carpi radialis longior serving to prevent this. Common sensibility was unaffected. In the second case, 20 minims of ether were injected into the back of the forearm. Next day there was paralysis of the muscles supplied by the posterior interosseous nerve, but not to such a marked extent as in the first patient, as the ring and middle fingers could be still extended. Nine weeks afterwards this patient still suffered from some degree of paralysis, but was gradually recovering. The first patient was treated with massage and blisters over the interosseous nerve without any improvement. Faradism produced no contraction of the muscles, even when the current was sufficient to cause severe pain. One month after the paralysis occurred the only muscles of the outer border and back of the forearm which were not paralysed were the supinator longus, the extensor carpi radialis longior, and the anconeus. There was marked atrophy. Galvanism was then used, and in one week the muscular contractions were sufficient partially to extend the thumb and fingers. Three weeks after commencement of galvanism the muscles had greatly increased in bulk and power. About three months after the injection the patient was still suffering from a considerable degree of paralysis, but was gradually improving. The author cites one other case of this kind reported by Arnozan (*Jour. de Méd. de Bordeaux*, 1881-82, pp. 526-29). It is, however, by no means so rare. Cases have been recorded by Pölchen (*Deutsche med. Wochenschr.*, 1886, No. 33), (two); by Remak (*Berlin. klin. Wochenschr.*, 1885, No. 5); and by Neumann (*Neurol. Cbl.*, 1885, No. 4). In the discussion on Remak's paper several other cases were cited. Arnozan observed no fewer than 7 cases. In conjunction with Salvat he performed a number of experiments on animals, and concluded that the ether acted locally on the nerve, causing neuritis. Extreme cold applied to the nerve had a similar effect. They found that subcutaneous injection was rarely followed by paralysis, and that it was never severe; but if the ether were injected deeply between the muscles neuritis was always more or less marked (*Gaz. Hebdomad.*, 1885, No. 2).

## LARYNGOLOGY.

**(292) Fracture of the Larynx.**

DR. ALFRED SOKOLOWSKI (*Berlin. klin. Wochenschr.*, No. 40, 1890, p. 914) records a case of fracture of the larynx in a young peasant woman, aged 20, who on January 4th, 1888, was caught in the wheel of a chaff-cutting machine by her apron, which was thrown over her shoulders and tied round her neck in a knot. She was immediately seized with acute pain in the larynx and severe dyspnœa, soon followed by cough and blood-stained expectoration. On being first seen on the following day by Dr. Sokolowski, she exhibited cyanosis and œdema of face, severe dyspnœa with harsh stridulous cough and hoarse voice, and much purulent expectoration. Externally the throat was swollen, and there was subcutaneous emphysema. There was a marked depression over the left wing of the thyroid, with severe pain and distinct crackling on firm pressure. The right side of the thyroid, cricoid, and hyoid appear not to have been injured. No injury to thorax; breath sounds normal. Laryngoscopic examination disclosed epiglottis somewhat swollen and reddened, and below this two swollen masses corresponding in position to the ventricular bands, and occluding cavity of larynx. Left swelling thicker than right; posterior laryngeal wall invisible. The urgent dyspnœa and cyanosis demanded immediate opening of the windpipe, which was done. The tube was inserted into an opening (found on dividing the skin and soft parts) leading through the left wing of the thyroid and anterior surface of the cricoid into the larynx, making the operation an inferior laryngotomy. Two fragments

of cartilage, the size of a pea, came away. There was immediate relief to the dyspnœa. Cough, purulent expectoration, and extrusion of small necrotic fragments of cartilage every few days continued for some time. In the middle of the fourth week after operation an attempt was made to do without the cannula, but dyspnœa compelled its reintroduction. At the end of the fourth week complete laryngoscopic examination (for the first time possible) revealed a rhomboidal opening into the larynx of the diameter of 1 centimètre; trachea not visible. The case remained in this condition for two months, patient feeling well, and breathing freely through the tracheotomy tube; several attempts to remove the latter permanently were unsuccessful. The author judged the parts damaged to be the left wing of the thyroid and the posterior part of the cricoid, a considerable portion of the latter necrosing away. As there were constant symptoms of a stricture, laryngotomy was performed three months after the tracheotomy, whereupon it was proved that the posterior part of the cricoid had disappeared. This operation had no ill effects, and was apparently merely diagnostic. After two more months the patient was discharged, wearing a tracheotomy tube. In January, 1890, the patient again came to the hospital, when attempts were made to remove the tube permanently, but without success. The patient during the whole time (except for a few days after the laryngotomy) could swallow perfectly. The paper concludes with some valuable general remarks on the history, mechanism, incidence, diagnosis, and treatment of fractures of the larynx. The necessity of tracheotomy is urged as a routine measure, followed by attempts to replace fractured parts; if necessary for this purpose the crico-thyroid membrane should be divided; and, if the fractured and displaced parts be not replaceable, they should be removed. Dr. Sokolowski believes this is only the second case on record in which a favourable termination has followed a severe fracture of the cricoid cartilage.

## BACTERIOLOGY.

### (293) Bacteriology of Water.

Dr. Johannes Petruschky (*Centralbl. für Bakteriologie u. Parasitenk.*, Bd. viii, No. 20) describes a new form of flat-sided flask in which to make cultivations directly from water at its source of supply, and one which may also be useful for the preparation and examination in plate cultivations of anaërobic micro-organisms. It consists of a thin flask flattened on two sides, with an indentation at the neck to prevent the flowing out of the softened gelatine. It may be used, as Esmarch's and Kowalski's tubes are, simply with a plug of cotton wool; but for anaërobic cultivations, glass tubes similar to those used in a wash bottle are introdnced. These are fitted into an india-rubber cork, which closes the mouth of the bottle. Through these hydrogen may be driven to displace the air, the ends are carefully sealed, the flask is laid on its side, and the gelatine is allowed to cool. He describes two forms—one made of glass, the other moulded. The former is from 10 to 11 centimètres high, 5 centimètres broad, and 1.5 from wall to wall; the moulded form is 12.5 centimètres high, 6 broad, and 2 from wall to wall. The thin form made of blown glass is specially useful where the organisms have to be examined in position, when the layer of gelatine or agar, it is pointed out, should not be too thick, especially where it is suspected that several kinds of organisms are together and must be separated. The inventor claims for this form of flask several advantages over Esmarch's tubes, Kowalski's flasks, and Petri's double glass dishes. He thinks that it will be specially useful for the separation of such organisms as the diphtheria bacillus by Loeffler's method. Dr. Pfugl (*ibid*, Bd. viii, No. 21, November 13th, 1890) recommends the use of tall glass vessels with flat bottoms 2.5 centimètres in diameter, 10 centimètres long, with a tube 6 or 8 centimètres long, which can be easily closed, leading from the tube. This is thoroughly sterilised by being heated in a flame, and whilst the air is rarefied the point is sealed up, and the bottle is kept warm until the glass is well hardened. When this is to be filled it is plunged under water or in the stream, at a tap, or pump, and the point of the tube is broken off with a pair of sterilised forceps; water rushes in, and usually about half fills the vessel. The tube is then dried carefully with blotting paper, and the opening is again sealed with a spirit lamp. After this is thoroughly cooled, the flask is shaken to see that there is no leak. To remove the water the tube is nicked with a file and broken off, and a sterilised pipette is introduced. These flasks are packed in the zinc cases, in each of which there are half a dozen round boxes large enough to take the flask, which is there kept from shaking by means of cotton wadding. Round these ice is packed in order to prevent the development of the micro-organisms during transit. The apparatus is convenient and cheap. A box for six flasks costs about 12s., and the flasks 2½d. to 3d. each.

### (294) Flagella of Bacteria.

Loeffler (*Centralbl. f. Bakt. u. Parasitenk.*, Bd. vii, No. 20, May 16th, 1890, p. 625) gives the results of his experiments on staining the flagella of various forms of bacteria. He finds that it is possible to "mordant" the bacteria with certain reagents, after which they take up the aniline colours very rapidly. Experimenting with the typhoid bacillus, he found that a ferro-tannate of campeachy wood extract used with methyl violet or certain other dyes brought about a weak staining of the flagella or cilia, and that if to this were added, drop by drop, a 1 per cent. solution of sodium hydrate, the staining became much more intense, but it was still far from satisfactory. If he used 10 cubic centimètres of a solution of 20 per cent. tannin, 1 c.c. of a cold saturated solution of ferri-sulphate of ammonia, and a watery solution of indigotin, or of wollschwarz, or a weak alcoholic solution of methyl violet 1 cubic centimètre the staining was more succesful. He found that he obtained the best results with certain organisms by adding a small quantity of acetic or sulphuric acid. In the case of cholera bacillus the flagella were exceedingly well brought out with 2 drops of the acid, the vibrio Metschnikoff with 4, spirillum rubrum with 6, spirillum concentricum with 1; whilst with the alkaline fluid 4 drops of a 1 per cent. sodium hydrate solution gave the best results with the white potato bacillus, 12 drops with the bacillus crystallosus, 20 drops with the micrococcus agilis, and 22 with the typhoid bacillus. The best mordant is a rather larger percentage of sulphate of iron, 5 cubic centimètres to 10 cubic centimètres of the 20 per cent. tannin solution. By different combinations of this solution with acid and alkali he was able to bring out the flagella in a very considerable number of motile bacilli, some of which grow with the development of an acid, others with an alkaline reaction. He gives special directions for the growth of bacteria in which these flagella are to be demonstrated, and points out a number of difficulties with which the observer has to contend, such as breaking off of the flagella, running together in bundles where there are more than one, and the difficulty of determining what

really belongs to the bacillus and what does not. In some cases there was a single thread only, in others they were numerous, and appeared to come from different parts of the organism. He gives eight photographs, which show the result of his work.—Dr. Trenkmann, in a second paper (*Centralbl. f. Bakt. u. Parasitenk.*, Bd. viii, No. 13, September 19th, 1890, p. 385) gives what he describes as a short and certain method of demonstrating the flagella of motile organisms. To cultivate them he takes a 2 cubic centimètre cube of cooked potato, boils it in 10 cubic centimètres of distilled water, and makes a kind of potato broth, which is sterilised. After the organism has grown on this medium he dilutes from five to ten times by taking a drop of the culture, putting it on a slide, and adding two or three drops of boiled water, after which he takes a single drop of this mixture, and repeats the process of dilution on another slide. Such organisms as will not grow on potato are cultivated in meat bouillon, which must be diluted forty or fifty times, or on gelatine (plate cultivations), which must be diluted one hundred times. A drop of the diluted fluid is spread on the cover glass, on which a drop of 10 per cent. alcohol is allowed to fall, and the whole is dried in the open air or in a warm chamber at 40° C. The preparation is now placed in a 2 per cent. solution of tannin, to which 0.25 per cent. or 0.5 per cent. of hydrochloric acid is added, and allowed to remain in this from six to twelve hours; it is then washed thoroughly in water, and then in a solution of iodine, made by allowing crystals to dissolve in water for twenty-four hours. (In place of this, Gram's iodine solution or a drop of tincture of iodine in 10 cubic centimètres of water may be used.) After remaining in this for an hour a weak solution of gentian violet in aniline water made as follows is used as a stain: One drop of concentrated alcoholic gentian violet solution is added to 10 cubic centimètres of distilled water, and half of this mixture is added to 20 cubic centimètres of aniline water; stain for half an hour. Two per cent. of tannin and 0.01 per cent. of HCl. appears to be the best mordant in most cases, but it is advised that solutions with 0.01 per cent., 0.02 per cent., and 0.033 per cent. of acid be further experimented with, as Trenkmann thinks that the flagella of all the motile bacilli and spirilla may be thus stained.

## PHYSIOLOGY.

**(235) Observations on Intestinal Absorption in a Case of Lymph (Chyle) Fistula in the Human Subject.**

FROM time to time cases of fistula of the lymphatic vessels have been observed, but perhaps none of them have yielded such important results in connection with intestinal absorption as that observed and described by I. Munk (*Arch. f. Anat. u. Phys.* [*Phys. Abth.*,] 3 and 4 Heft., p. 376, 1890). The patient was a youth, aged 18, who for years had suffered from progressive elephantiasis, which resulted in the formation of a lymphatic fistula in the leg. When the lad was fasting the lymph discharged was clear, but during digestion it became milky and exactly resembled chyle. During fasting the quantity discharged was 70 to 120 grammes per hour, and during digestion 150 grammes. After a diet of fatty food, the lymph from the second hour became milky like chyle, and continued so until the fifth or eighth hour. It contained 4½ per cent. of fat, and showed the characteristic molecular basis. In the first thirteen hours after a fatty meal 60 per cent. of the fat taken in the food was recovered from the lymph discharged by the lymphatic fistula. Only a small part of the fat absorbed passed by the thoracic duct into the blood. It is well known that the lymphatics are enormously dilated in elephantiasis, and what happened in this case was that almost all the intestinal lymph—that is, the chyle—passed downwards *viâ* the left lumbar lymphatic trunk, and was discharged by the fistulous opening in the leg. In this way it was possible to measure the amount of various substances absorbed by the intestine. After fasting for seventeen hours the patient took by the mouth 41 grammes of olive oil in the form of lipanin. In the second hour the lymph contained 1.37 per cent., and at the fifth hour 4 34 per cent. of fat. With mutton fat the maximum was reached at the eighth hour, that is 3.8 per cent. The chyle fat was solid at the ordinary temperature, and its melting point was almost that of mutton suet. After an enema of 17 to 20 grammes of oil slightly emulsionised with soda, the lymph at the maximum contained only 0.34 per cent. of fat, and only 3.7 to 5.5 per cent. of the fat of the enema was absorbed. Munk had previously shown (*Zeitsch. f. physiol. Chemie*, 1885, and *Pflüger's Archiv*, Bd. xlvi, 1889) in animals, that when fatty acids are given by the mouth they are absorbed as such, but that in the first absorbent passages, that is in the very act of absorption they are synthetically converted into neutral fats, for it was found that after taking fatty acids, neither these nor their alkaline salts, that is soaps, but the corresponding neutral fat, was obtained from the chyle. The present case afforded an opportunity of testing the truth of this observation in man. This was done by using a "heterogeneous" fatty acid, that is one not occurring in the human body, namely, erucic acid from rapeseed oil, and ascertaining if the lymph contained the corresponding neutral fat, erucin. The patient took erucic acid in capsules; before the experiment the lymph contained 0.11 per cent. of fat, after the fourth hour it became milky and contained 0.5 per cent. of fat. After thirteen hours and a half, 1,096 cubic centimètres of lymph were obtained, which contained 8 grains of matter soluble in ether. The residue contained practically no fatty acids or soaps, so that the erucic acid was present as such only in traces, and it was found that it was present almost entirely as erucin as a neutral fat. Thus, in man also it was shown that neutral fats are formed by synthesis from heterogeneous fatty acids introduced with the food; but this process requires longer time than for the absorption of fat as neutral fat. After the introduction of large quantities of carbohydrates (100 grains starch and sugar), the sugar in the lymph rose from 0.095 per cent. while fasting to 0.13 in the first and 0.164 per cent. at the third and sixth hours, and 0.21 per cent. at the ninth hour. On an average, scarcely 1 per cent. of the total quantity of carbohydrates taken appeared in the lymph. This experiment confirms the results obtained on animals by von Mering and Ginsberg that the sugar absorbed from the intestine—all except an excessively small amount—is absorbed by the blood stream. After taking 103 grains of albumin (500 grains cooked meat) within the next twelve hours, neither the quantity of lymph nor the absolute amount of proteid discharged in the lymph underwent any marked change, so that, as with sugars, the proteids must be mainly absorbed by the blood vessels, and only a very inconsiderable amount of the lacteals. The very residue of the lymph during digestion runs parallel with the fatty matter contained in it. In connection with the absorption of fat, we may also cite the recent observations of P. v. Walther conducted under Ludwig's direction (*Archiv f. Anat. u. Physiol.* [*Phys. Abht.*,] Heft 3 and 4, p.

327, 1890). Walther confirms Munk's statement that fatty acids, given in the food, appear as glycerides or neutral fats in the chyle, and he has found that the sympathetic change does not take place in the stomach. Part of the fatty acids, however, are changed into glycerides, or neutral fats, in the small intestine. It is plain then that the absorption of fat is not merely a physical process, but that before it reaches the lacteals it undergoes important chemical changes.

**(296) Physiology of the Bronchial Musculature.**

G. SANDMANN (*Arch. f. Anat. u. Physiol.* [*Physiol. Abth.*], 3 and 4 Heft, 1890), desires to clear up the contradictory statements that are made relative to the motor effects of the vagus on the bronchial muscles; some observers maintaining that it is without effect; others, including Brown and Roy, positively asserting that these muscles are influenced by stimulation of the vagi. The experiments were so arranged as to obtain tracings of the variations of pressure in the air passages. Stimulation of the peripheral end of the divided vagus causes considerable variations—increase or decrease—of the intra-bronchial pressure, the former due to contraction and the latter to dilatation of the bronchi; and it was found that weak stimuli usually caused contraction, and stronger ones dilatation. Stimulation of the central end of one vagus with weak stimuli—the other vagus being uncut—causes dilatation of the bronchi as shown by a fall of the curve. It is evident that fibres run in the vagi which innervate the bronchial muscles; one set corresponding to the vaso-constrictors of blood vessels cause contraction, and the other set corresponding to the vaso-dilators cause dilatation of the bronchi. This is true for the dog, cat, and rabbit. In the cat and rabbit, atropine does not cause paralysis of the constrictor fibres. The bronchial musculature may be influenced reflexly. Stimulation of the nasal or laryngeal mucous membranes causes a reflex contraction of the bronchi. The experiments were made in the physiological laboratory of Du Bois Reymond, in Berlin, under the direction of Professor Gad.

**(297) Transformation of Ciliated into Squamous Epithelioma as a result of Friction.**

DRS. JOHN B. HAYCRAFT and E. W. CARLIER (*Quarterly Journal of Microscopical Science*, February, 1890) record some observations which they have made on the trachea of the cat. They show that in the kitten the mucous membrane of this tube is lined by columnar epithelium. In the adult cat the trachealis muscle causes an overriding of the extremities of the tracheal cartilages; this causes the ends to project into the trachea, and form a longitudinal ridge, which is separated by a deep groove from the part of the wall formed by the overriding cartilages. Whenever the trachealis contracts or relaxes, the epithelium in the groove is subjected to friction, and becomes gradually transformed from columnar ciliated into stratified squamous epithelium. Some good drawings illustrate the paper.

## PATHOLOGY.

**(298) Diabetes Mellitus after Extirpation of the Pancreas.**

J. v. MERING and O. MINKOWSKI (*Arch. für exp. Path. und Pharm.*, Bd. 26, p. 371) found that after total extirpation, under antiseptic precautions, of the pancreas in dogs the animals lived at most four weeks, and during that time not only was the urine increased in quantity, but it was found, within twenty-four hours after the operation, to contain a very large amount of sugar, which continued to be excreted in like quantities until death ensued; besides sugar, the urine contained also acetone and fatty acids. In addition to the changes in urine so characteristic of diabetes mellitus, the appetite became voracious, thirst, great and rapid emaciation set in, and other serious symptoms of diabetes mellitus, as seen in man, supervened. Fat and undigested portions of food were found in the fæces. In all twenty-one dogs were used, three of which died soon after the operation, and in these sugar did not make its appearance in the urine, probably from suspension of the secretory function of the kidney, as very little urine was found in the bladder after death. The amount of sugar excreted varied with the amount of food given, and the glycogen, both in the liver and skeletal muscles, had in great part disappeared. It would appear from these experiments that nothing short of a total extirpation of the gland would suffice to bring this about, as ligature of all the ducts, and therefore complete occlusion, did not produce diabetes mellitus. Nor could they find any evidence of having injured the contiguous solar plexus in the operation. No satisfactory explanation of the occurrence of those changes has as yet been given, and whether the pancreas possesses some obscure power over the metabolism of carbohydrates in the body remains to be determined.

**(299) Congenital Absence of the Male Penis.**

DR. RAUBER (*Virchow's Archiv*, Bd. 121, Heft 3) records very briefly the case of a shoemaker, aged 38, who complained of pain and trouble in the anus. On examining him Rauber found a well-formed scrotum containing two testicles, each with a vas deferens and spermatic cord, but no trace of a penis. The urethra opened apparently into the anterior wall of the rectum. The man occasionally experienced sexual excitement, followed by an emission into the rectum. The burning pain complained of in the rectum and about the anus was due to irritation caused by the urine. The man would not allow an ocular inspection of the interior of the rectum. Unfortunately the details of this very rare condition are incomplete.

**(300) Changes in Osteomalacia.**

HIRSCHBERG (*Cent. für Chir.*, No. 46) describes a remarkable combination of different morbid changes in the bones of a case of osteomalacia. The bones were those of a person aged 38 years, who had suffered for a period of four years from swelling in them, passing lameness, and fracture in one or more places of several of the long bones. These bones were soft, to a great extent decalcified, and in parts absorbed where a deposit of new osteoid kind of tissue had taken place. In addition to the above changes so closely allied to those seen in osteomalacia, there were numerous cysts of varying sizes scattered through the substance of the altered bones, which were evidently derived from softening and liquefaction of small localised hæmorrhages. None of these showed a lining of epithelium. Besides this cystic degeneration, there was found a small mass in the substance of one tibia, which showed on microscopic examination all the features of a myeloid sarcoma, but no other similar masses could be detected. There was no further evidence of the affection being of a sarcomatous nature, but the combination of sarcoma-like mass with extensive cystic degeneration and osteomalacia forms the interesting features of the case.

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